Volume 2 Number 5 *Supporting NASA IITA Cooperative Agreement Teams* May 1997

# IITA Bulletin

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## News Bytes

### NASA IITA Product Guide Now Available on IITA Web Site

The Spring 1997 NASA Information Infrastructure Technology & Applications (IITA) Product Guide is now available on the IITA Web site.

The guide profiles the many diverse projects under IITA's umbrella, and offers a concise overview of IITA, the Remote Sensing Public Access Center (RSPAC), Public Use of Remote Sensing Data (RSD), Digital Library Technology (DLT), NASA Center-Based K-12 Education Outreach, and K-14 Aeronautics.

To view the product guide, visit **http://iita.ivv.nasa.gov/products**

"NASA's IITA project is using, promoting, and advancing newly emerging Internet-based technologies to bring the vast amounts of NASA science and engineering data into our classrooms and into our homes. Access to this knowledge enables the public and industry to contribute to rapid and significant advances in science, engineering, and technology, to the benefit of all," IITA Project Manager Mark León writes in his executive summary on the site.

The IITA project (which consists of fifty-one grants and cooperative agreements) and its respective programs increase public access to scientific databases, develop new applications and pilot programs for using science data, and create new curriculum products and tools for K-12 education.

The IITA's thirty-nine Web servers are currently sustaining a rate of more than 400,000 accesses per day, serving an estimated 21,000 people per day. Over half of the IITA Internet sites received a top score from one or more independent rating companies. IITA images have been featured in national media, both in print and online. The IITA project has won national recognition for advancing the state of the art in areas such as distance learning, virtual conferencing, image processing, and access to information.

"In light of our organizational goals and our public mandates, we know we've just begun the process of revolutionizing access to NASA information. Despite our accomplishments, it is clear that there is still much to be done. However, for today, we will pause to consider what has been brought about, and at the same time, look ahead to the future. We invite you to consider our accomplishments and join us in looking into the possibilities that lie ahead," says León.

### NASA's "Exploring the Internet" CD-ROM Now in Second Printing; Available for Only $3.50

NASA's "Exploring the Internet" CD-ROM, the perfect tool for the beginning Web surfer, has undergone a second printing due to popular demand. The CD-ROM is now available for the remarkably low price of $3.50, which includes shipping and handling. (Prices outside the US are slightly higher. See below.)

The CD-ROM casts students and first-time adult users as Internet explorers, taking them on an exciting, futuristic journey through cyberspace in a souped-up Spanish galleon. New online explorers discover what the Net is, what it's used for, and learn how to navigate it.

NASA's "Exploring the Internet" is also fun. Throughout the cyberjourney, you'll meet memorable characters who explain the wonders of the Internet through a fantastic display of color illustration, video clips, 3-D animation, music, and wild sound effects.

In short, NASA's "Exploring the Internet" is the perfect tool for the classroom — or anyone — who wants to learn about the Internet in an entertaining way.

The CD-ROM was developed to bring the excitement of the Internet to your computer and showcase the vast resources NASA and others make available via the Web. It is minimally priced to make it available to the broadest possible audience.

To find out more about NASA's "Exploring the Internet," visit the CD-ROM's Web site, located at **http://cdrom.ivv.nasa.gov**

To order, send check or money order (in US dollars only) made payable to BDM to:

BDM-RSPAC
Attention: CD-ROM
100 University Drive
Fairmont, WV 26554

If you have questions or wish to place orders for multiple copies, the e-mail address is **cdrom@rspac.ivv.nasa.gov**

If you'd like to order via fax, the number is (304) 367-8211.

(Cost of the CD-ROM outside the US is $3.60 in Canada, $4.50 in Mexico, and $6.50 in all other countries, in US dollars only.)

# Nothin' but Net

## Survey Says!

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*The Graphic, Visualization, & Usability Center ran its sixth user survey from October 10, 1996, through November 1996, and was endorsed by the World Wide Web Consortium (W3C, which develops common standards for the evolution of the Web) and INRIA (the European host for the W3C in collaboration with CERN, where the Web originated).*

*There were over 15,000 respondents, making this the second largest of GVU's six surveys to date. Some of the findings are reprinted here:*

**High-Level Summary and Trend Analysis**
**Cultural and Societal Impact**

*What do users feel is the most important issue facing the Internet?*

When users were asked what they felt was the most important issue facing the Internet, 40% said censorship, 26% said privacy, and 14% said navigation. Younger users were more concerned with censorship, while older users were more concerned with navigation.

*What do users feel about the continued dominance of the English language on the Web?*

When asked how they felt about the continued dominance of the English language on the Web, 59% of those surveyed said they thought the impact on language and culture would be more helpful than harmful.

Almost half (46%) of those surveyed said they felt more connected to people who share their interests since coming online.

**General Demographics**

*What's the average age?*

The average age of those responding was 34.9 years old (31% female and 69% male), with European users being predominantly male (80%).

*What about location, marital status, & occupations?*

The largest number of those responding lived in the US (83%). Of all respondents, 46% were married and 37% were single. Seventy-five percent of those aged 19-26 were single, while 75% of those aged 50 and over were married.

*Occupations*

There was a slight increase of users in management and professional fields. European users were more likely to be in computers or education than those in the US. Women were only half as likely as men to be in computer-related fields, but just as likely to be in management or professional positions.

*How willing are users to pay for access to Web sites?*

More than two-thirds (68%) reported that they were not willing to pay for access to Web sites.

*What are their voting behaviors*?

Of those who were surveyed and were registered voters, 55% said they had voted in the most recent local and national elections.

*Data Privacy*

When asked how often they falsified online registration information, 63% said they never had, 34% said they had, and 3% preferred not to say. Of those who had falsified online, 67% said they did so infrequently, and 34% said they did so often.

*Why don't people register at sites?*

The most widely cited reason for not registering was that the terms and conditions for how collected information was going to be used were not clearly specified (70%). Many users (70%) also felt that the effort required to provide the requested information was not worth being able to access the site. Over 62% said they did not trust the collecting site, 39% stated that time was a factor for avoiding registration, 45% stated that it was postal mail requirements, while 31% gave name requirements and 22% gave e-mail requirements as the reason.

*What information do people think ought to be automatically recorded during a Web transaction?*

Most users (77%) agreed that sites ought to be able to record the page that is requested, while 74% said the time a page is requested is important. Less than half (44%) thought that browsers need to be loggable, but the machine name/address (27%), the operating system (27%), the user's e-mail address (21%), and the location of the user (20%) seemed less important. Fewer still (19%) thought having an identifier that would uniquely label users during a session was necessary.

*What would users like to see done about spamming?*

The majority of those who responded favored an opt-out system where users' names could be placed on a list of those who do not want to receive mass e-mailings. Others (16%) believed an impact fee should be levied on agencies which did mass mailings, and 6% favored making spamming illegal.

**WWW Usage & Preferences**

*Where do people access the Web from most?*

Most of those surveyed (64%) stated that they primarily accessed the Web from home.

*How often do people use a Web browser?*

When asked how much time they spent on the Web, 20% stated that they were online twenty hours a week or more, 30% said ten to twenty hours a week, 17% said seven to nine hours a week, 18% said four to six hours a week, and 15% said five hours per week or less.

*Why do people use a Web browser?*

When asked their main purpose for using the Web, most (77%) stated that they were just browsing. After that, 64% said entertainment was their major purpose, 53% said education, and 51% said work; 19% were shopping.

*What are the main problems with using the Web?*

Speed is still the biggest problem for Web users (77%). The next biggest problem is finding known information (34%), followed by organizing collected information (31%) and being able to find pages already visited (13%). Cost seems a low priority, with 8% of the users polled seeing it as a problem.

*How often do people use the Web instead of watching TV?*

Of those surveyed, 37% said they used the Web instead of watching TV on a daily basis, and 29% on a weekly basis.

*How fast are people's connections to the Internet?*

When questioned about modem speeds, 51% said they used a 28.8 Kb/sec modem and 20% used a 14.4 Kb/sec modem. This is a significant increase in modem speed over last year.

**Purchasing, Security, and Vendors**

*What do people purchase on the WWW?*

Over half bought computer software and hardware, 21% made travel arrangements, 19% bought books and magazines, and 14% bought musical tapes, CDs, and albums.

*How much have people spent online in the past six months?*

Of those surveyed, 36% made purchases of less than $10, 20% spent between $10 and $99, and 30% spent over $100.

**Web Authors and Java**

*Have you used Java and do you plan to use it in the future?*

Of those who responded, 24% said they have programmed in Java, an increase over last year.

*What are the major advantages of Java?*

When asked their opinion on the advantages of using Java, 50% said they thought its platform independence was the most important advantage, 33% liked the fact that it doesn't re-

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# Nothin' but Net (Cont.)

quire special permission to run, and 22% enjoyed Java's level of interactivity.

*How secure is Java?*

Of those surveyed, 45% didn't know how secure Java was.

**GVU's WWW User Survey Methodology**

GVU has tried to collect as much information as possible, with as much accuracy as possible, and with as varied a sampling of users as possible. This survey is conducted entirely over the Web, with users providing answers to questionnaires that are posted on the Web. The surveys are conducted every six months and are done as a public service for the WWW community. GVU asks for suggestions and further comments for running its surveys.

# CAT in the Spotlight

## Passport to Knowledge Announces "Live from Mars" Electronic Field Trips

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Throughout this summer and fall Passport to Knowledge (PTK) will offer a unique perspective on NASA's robotic missions to Mars via the "Live from Mars" electronic field trip. Passport to Knowledge connects students to leading-edge scientific research through the integration of multimedia resources — live telecasts (carried by NASA-TV and PBS stations), a full array of Web-based online resources, and highly rated print materials.

Schools may be out of session for the summer, but students around the country (and their families) will find that there will be plenty of opportunities to connect with the Mars Missions via Live from Mars.

This July 4, there will be fireworks on Mars. Early that morning, retrorockets will slow NASA's Mars Pathfinder spacecraft, and that evening we'll see the first new images of Mars in over twenty years. Thanks to modern telecommunications and an unprecedented collaboration between NASA, the National Science Foundation, and a number of museums, space interest groups, and media producers, teachers and students can participate in this historic event.

On Sunday, July 6, and Wednesday, July 9, from 2:00-6:00 p.m. (EDT), Passport to Knowledge and the American Museum of Natural History in New York will present two 2-hour "Live from Mars" specials. Using live, interactive television, these broadcasts will link selected museums across America and around the world directly with Mars experts at NASA's Jet Propulsion Laboratory in Pasadena, CA, and with scientists from the American Museum and other scientific institutions. Viewers will have the opportunity to see the latest pictures from Mars, meet the men and women who fly the missions, thrill to "virtual reality" representations of the first travels of Sojourner (Pathfinder's robotic micro-rover which will be exploring the Martian surface), and much more.

Sunday's broadcast will also include a live feed from The Planetary Society's three-day "PlanetFest"—a celebration of American achievements in space exploration, including the Galileo spacecraft's astonishing images of Jupiter's moon Europa, showing icebergs covering what is now thought to be a liquid-water ocean.

These dates and times will complement the anticipated news coverage of Pathfinder's landing and continuing mission. The Sunday program will air during prime museum-going hours, enabling families to join together to marvel at the latest images from the red planet. The Wednesday programming will be designed to appeal to groups of younger visitors (who may come to an institution as part of a summer camp), while still appealing to a broad general audience.

The free, unencrypted programs will be carried to the national audience on GE-2, transponder 21, C-band, 85 degrees west, 4120 MHz, vertical polarity, audio on 6.2 and 6.8. (This is the same satellite that carries NASA-TV, and will be easily accessible to many museums and science centers.)

Support materials suggesting hands-on activities and workshop topics for museum educators are being developed by the American Museum of Natural History and Passport to Knowledge, and will include print, video, and online resources. In addition, Passport to Knowledge has already published an extensive multimedia kit, available for $99, which includes a sixty-four-page Live from Mars Teacher's Guide, (available separately for $10), as well as the Planetary Society's Explorer's Guide to Mars, an original set of Mars slides, and a sixty-minute orientation video (VHS) containing a host of Mars-related material (including NASA mission animations and "Mars the Movie"). PTK's Web site, at **http://quest.arc.nasa.gov/mars**, provides extensive background on the mission and links to other valuable Mars sites.

The "Live from Mars" fall program includes two hour-long telecasts as we continue to track the Mars Pathfinder and Mars Global Surveyor missions to Mars. Broadcasts are carried on NASA-TV, PBS's main satellite, Telstar 402R, and many PBS stations around the country.

**LIVE FROM MARS #4:**
**"WITH PATHFINDER TO MARS"**
**October 14, 1997, from 1:00-2:00 p.m. EST**

Highlights of the earlier programs. A reedited compilation (distributed on tape, not live) of the previous programs, designed to reintroduce students to this unique opportunity to travel virtually to Mars. Follow the Pathfinder's travels, from "launch through landing," in the new school year of 1997-98, and prepare them for...

**LIVE FROM MARS #5:**
**"TODAY ON MARS"**
**November 18, 1997, from 1:00-2:00 p.m. EST**

Live weather data and imagery from Mars show what has been learned to date from the Pathfinder lander and rover. The continuing data stream provides students with material to analyze in math and computer classes. It will show what Sojourner has revealed about the composition of Martian rocks and what this implies for the question of liquid water and the possibility of life. A preview of the next decade of exploration.

# All about Cats

## NASA-Aviation Academy 2000
## Wooddale High School

**http//www.mecca.org/~tschieff/WOODDALE/woodframe.html**

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With the help of funding provided by the NASA-Aviation Academy 2000 grant, the technology base and thematic content being developed at Wooddale have attracted national attention. Accordingly, the Wooddale Aviation Academy 2000 project has been asked to participate in the Public Education Network (PEN) as one of ten original content-contributing schools in the country.

Initially, the academy staff will continue to develop secondary (9-12) aviation curricula and students will place them on Wooddale's Web site. As the lessons are approved, files will be uploaded to the PEN server for satellite download by other educational communities. Satellite transmission feeds, although expensive, may be the only way that some remote schools with underrepresented minority population groups will be able to access the World Wide Web and the information provided by the PEN.

The installing company, Digital Concepts, Inc., has applied for a grant which will defray some of the expenses for the satellite feed. As one of the ten content hub sites in the US, there will be additional funding for salaries for teachers, students, and the broadcast service charges. In addition, Universal Services will provide a ten to ninety percent discount on monthly Internet costs. This decision was announced by the FCC on May 10.

If the Public Education Network grant is not approved, Universal Services funding is delayed, or no other subsidized funding can be found, there is an exit clause with absolutely no penalties. The satellite dish, file server, and connecting wiring will simply be removed from Wooddale at no additional cost. Every effort will be made to secure the required funding (maybe through NASA) in the event that the grant is not approved.

Servers are currently installed in Florida, Georgia, California, Nevada, Nebraska, Kansas, and Tennessee.

This prototyped network, with its unique remote delivery system, demonstrates an innovative use of WAN capabilities and shared distanced learning skills that promotes aeronautical objectives.

## LDAPS
## LEGO Data Acquisition and Prototyping Systems
## Tufts University

**http://ldaps.ivv.nasa.gov**

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The LDAPS project is an interdisciplinary methodology designed to motivate student interest in science by beginning with engineering. Kids are natural engineers, and through engineering questions like "How does the wind-up toy work?" they will become motivated toward answering the related science question "How does the universe work?"

LDAPS uses LEGO Dacta products, the LabVIEW programming environment, and the Internet in its methodology. Lego Dacta products are perfect for engineering design and science inquiry. Lego Bricks, which many kids already play with, combined with Dacta gears, pulleys, motors, etc., provide an excellent engineering environment. Lego Dacta sensors (temperature, rotation angle, light, touch) and third-party sensors (pH, force, pressure, humidity, etc.) that have been adapted for use with Lego hardware allow students to come up with their own scientific questions and design their own experiments using their new engineering knowledge!

The LabVIEW programming environment (student version) is completely graphical, and students as young as kindergarten-age are programming with it. The Internet is used to keep teachers and students connected with each other, from sharing ideas via e-mail to creating their own homepages on the World Wide Web. The pages can be reached through the project's award-winning site at **http://ldaps.ivv.nasa.gov/**

There are currently sixteen teachers in eleven schools across the country acting as co-investigators on the grant, incorporating LDAPS methodology into their math, science, and reading curricula. One kindergarten class, for example, has used Lego Bricks to build an entire town. When they ran out of bricks, they used a digital camera to make the town "virtual" on the class Web site, where the whole town could be represented. Students had to plan the layout of the town and learned a lot about how it operates. Many more workshops are planned to get more teachers involved as the LDAPS project grows.

## Take Off!
## Aeronautics and Aviation Science Careers and Opportunities
## Massachusetts Corporation for Educational Telecommunications (MCET)

**http://www.mcet.edu/nasa/**

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Two live broadcasts were aired last month: "The Human Factor," focusing on human physiology in relation to flight, and more generally on the concept of space orientation and our relationship with the surrounding environment. The show explores the visual, kinesthetic, and vestibular senses, and addresses how humans achieve a sense of balance through the integration of the different nervous impulses; how the human brain misinterprets the signals; the difference between nighttime and daytime vision; and the consequences of color interpretation and adaptation of the eye to varying light intensities. The "Career Corner" guest was Dr. Margaret Rappaport, psychologist and pilot of seaplanes, gliders, and single engine props. Dr. Rappaport has taught psychology at the University of Dar es Salaam, Tanzania, and in schools in Uganda, Kenya, and Ethiopia.

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# All about Cats (Cont.)

"Navigation," which addressed how we get "from here to there," included composition of vectors, coordinate systems on a plane surface, (meridians and parallels), and three-dimensional frames of reference: our position relative to fixed objects in the sky. The Global Positioning System (GPS) was introduced by Colleen Donovan, engineering psychologist at the Volpe National Transportation Center in Cambridge, MA. She discussed how GPS works and how many satellites are necessary to determine a position on the surface. Ann Wood Kelly, former World War II pilot, was the guest in the "Career Corner." Ms. Kelly was one of twenty-four young US women transferred to England to work with the British Royal Air Force and contribute to the war effort as airplane pilots. Ann Wood Kelly shared some of her memories of the war years with the participating students and highlighted the evolution in navigation systems through the technical innovations introduced over the years.

**Web Site**

Sean P. White, former computer science student at MIT and presently enrolled at the Worcester Polytechnic Institute, is the new Web developer for the Take Off! Web site. Sean brings to the project many skills developed during his work as a software engineer and Webmaster for the Internet Company, and in hardware and software support for the Boston Tea Party, Waldensoftware, and Computer City. In addition to his experience as a computer class instructor, Sean brings a love for aviation and aviation-related topics.

Web page upgrade is underway. Variations include, but are not limited to, a new graphical interface, reorganization of the general layout, update of broadcast-specific content, and development of new pages (including a glossary of terms, an interactive aviation timeline, a "Teacher's Lounge" containing guidelines for instructional use of the site, and links to educational resources online).

# Cool Links

## Cool Space Science Site

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Interested in comets? You will be once you've seen comet Hale-Bopp. In fact, this comet already created broad public interest in comets and astronomy in general. For one of the best sites displaying an extensive and up-to-date picture gallery of comet Hale-Bopp, go to the Web site of the Col Drusciè Observatory in Cortina D'Amprezzo, Italy, at **http://www.sunrise.it/associazioni/aac/ricerca.htm#comete**

Click on "Comete e Asteroidi - Comets and Asteroids" and then on "Comet Hale-Bopp (1995o1)."

While you are at this site, you might want to check out some of its other offerings, such as deep sky objects, supernovae, asteroids, and other comets (e.g., Hyakutake, P/Swift-Tuttle, Shoemaker-Levy 9). Enjoy!

## Cool Earth Science Site

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Online Resources for Earth Scientists (ORES) is a list of online resources available through the Internet that may be useful to those interested in the Earth sciences. These resources consist of digital documents, news sources, software, data sets, and other online services that are available to the public. They include an extensive list of resource topics such as general Earth science, natural history, agriculture, biology, disaster and emergency management, environmental sciences, geography, cartography & GIS, and all aspects of geology (including earthquakes, engineering and environmental geology, geochemistry, hydrology and hydrogeology, mineralogy and mineral resources, paleontology, petroleum and geothermal resources, and volcanoes and volcanology).

The site also includes sources of online information about geoscience education, GPS & geodesy, oceanography, weather, meteorology & climate, remote sensing, soil science, and space and planetary science. The site also lists employment opportunities for Earth scientists.

Check it out at **http://www.calweb.com/~tcsmith/ores/**

If you would like to be on the IITA Bulletin mailing list, please send e-mail to Scott Gillespie at: sgillespie@rspac.ivv.nasa.gov, or write to: BDM/RSPAC, 100 University Drive, Fairmont, WV 26554. Phone: (304) 367-8324, fax: (304) 367-8211.

This bulletin will also be available in Adobe Acrobat format on the Developers' Workshop Web site at: **http://developers.ivv.nasa.gov/collab/pubs/bulletin/**